

ABSTRACT OF THE DISCLOSURE

A hydraulic holder of a cutting tool or workpiece with a hydraulic circuit contained in a cartridge separate from the holder. The cartridge is fixedly inserted in an axial bore of the holder for clamping a tool or workpiece. The hydraulic cartridge comprising a first actuator access port in the toolholder; a second actuator access port in a cartridge shell; a cartridge body affixed fluid tight in the cartridge shell; the cartridge body having (i) a piston cylinder in axial alignment with the first actuator access port and the second actuator access port, (ii) a first annular positioning ring having the piston cylinder extending radially through the first annular positioning ring and at least one channel disposed longitudinally in the first annular positioning ring and in communication with the piston cylinder, (iii) an upper clamping band with a first end of the upper clamping band adjacent the first annular positioning ring and the upper clamping band surrounding a portion of an inner wall that is deformable, (iv) a second annular positioning ring adjacent a second end of the upper clamping band and having at least one clamping channel, and the second annular positioning ring surrounding a portion of the inner wall, (v) a lower clamping band with a first end of the lower clamping band adjacent the second annular positioning ring and the lower clamping band surrounding a portion of the inner wall that is deformable, (vi) a third annular positioning ring adjacent a second end of the lower clamping band and the third annular positioning ring surrounding a portion of the inner wall, (vii) the inner wall surrounding

and forming a tool inner bore, (viii) an actuator adjustable radially through the first annular positioning ring, a piston moveable by the actuator, and a seal moveable by the piston through a seal displacement range, the actuator, piston, and seal in axial alignment with one another in the piston cylinder so that the seal is proximate to the at least one channel, and (ix) hydraulic fluid filling the portion of the piston cylinder proximate the seal, the at least one channel, the upper clamping band, the at least one clamping channel, and the lower clamping band.